UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,993	07/26/2000	Kyoko Higashino	Q60072	8492

7590 06/30/2004

Sughrue Mion Zinn MacPeak & Seas
2100 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER	
GONZALEZ, JULIO C	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/625,993	HIGASHINO ET AL.	
	Examiner	Art Unit	
	Julio C. Gonzalez	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,9,10,13-18 and 28-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9,10,13,14 and 28-32* is/are allowed.

6)☒ Claim(s) *1,2 and 15* is/are rejected.

7)☒ Claim(s) *3-5 and 16-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rich (US 4,102,040) in view of in view of Huang et al (US 5,592,731) and Tang (US 5,811,905).

Rich discloses a stator having an annular shaped stator core formed of laminations (see figure 2) and the stator core having a plurality of teeth defining a plurality of slots and the laminations having a first end surface and a second end surface fixed directly together to form an annular shape (see figures 7, 8, 16 and abstract).

However, Rich does not disclose that the total number of stator slots is 72 or more.

On other hand, Huang et al discloses for the purpose of improving the design for generators by reducing large radial deformations of stator cores, a stator core with a plurality of slots extending in axial direction (see figure 4b) and sets of coils are fitted into slots (see figure 6) and the total of slots is 72 or more (see figure 9).

Also, the stator core is formed as a lamination of a plurality of sheet-shaped magnetic members with a plurality of teeth defining the slots and the stator been formed in annular shaped (see figures 4a-4c).

However, neither Rich nor Huang et al disclose explicitly having two sets of three phase windings inside the slots.

On the other hand, Tang discloses for the purpose of producing a mutual coupling effects that are useful for torque production, two sets of three phase windings A, B, C and a, b, c , which are fitted in the slot of the stator (see figure 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design an alternator as disclosed by Rich and to use a stator with 72 slots or more for the purpose of improving the design for generators by reducing large radial deformations of stator cores as disclosed by Huang and to use two sets of three-phase windings fitted in the slot of a stator for the purpose of producing a mutual coupling effects that are useful for torque production and disclosed by Tang.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rich, Huang et al and Tang as applied to claim 1 above, and further in view of Maruyama et al.

The combined stator discloses all of the elements above. However, the combined stator does not disclose that the center of air gaps of adjacent slot opening are not the same.

On the other hand, Maruyama et al discloses for the purpose of reducing eddy current losses, a stator with adjacent opening of center of air gaps of slot opening is not the same (see figures 41, 42, 44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined stator as disclosed above and to have the center of air gaps not the same for the purpose of reducing eddy current losses as disclosed by Maruyama et al.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rich, Huang et al and Tang as applied to claim 1 above, and further in view of Scofield (US 2,371,268).

The combined stator discloses all of the elements above. However, the combined stator does not disclose that the teeth have a first and second projections and the projections have different lengths.

On the other hand, Scofield discloses for the purpose of improving the field structure of generators by facilitating the introduction of large windings on the

field poles that the stator teeth have a first and second projections and the projections extend in a circumferential direction and the first and second projection have different lengths (see figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined stator as disclosed above and to have teeth with different lengths of projections for the purpose of improving the field structure of generators by facilitating the introduction of large windings on the field poles as disclosed by Scofield.

Response to Arguments

5. Applicant's arguments with respect to claims 1-5 and 9, 10, 13-18 and 28-32 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

6. Claims 9, 10, 13, 14 and 28-32 are allowed.

With respect to claims 9, 13, 14 and 28-32, the prior art fails to disclose that the interval in the circumferential direction between a center of air gaps of adjacently formed opening portions is an alternating electrical angle of α degrees and (60 - α) degrees, and the α degrees is in the range from 16-29 degrees.

With respect to claim 10, the prior art fails to disclose Specifically, the prior art fails to disclose that the contact surfaces of the stator core are connected as an annular shape and are formed by dividing a wide tooth among the teeth of alternating widths in a circumferential direction with an orthogonal surface.

7. Claims 3-5 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
More specifically, the prior art fails to disclose the specific electrical angle for the center of airgaps for the slot openings.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the

advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is 571-272-2024. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jcg

June 25, 2004

TRAN NGUYEN
PRIMARY EXAMINER